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## Influenza-like illness and presenteeism among school employees

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### Abstract

We determined the prevalence of influenza-like illness (ILI) among employees of a suburban Ohio school district. In a survey of 412 of 841 employees (49%), 120 (29%) reported ILI symptoms during the school year, and 92 (77%) reported working while ill. Age 50 years and asthma were significantly associated with reporting of ILI symptoms. Encouraging school employees to receive the seasonal influenza vaccine and to stay home when ill should be part of a comprehensive influenza prevention strategy.

### Keywords

ILI; Teachers

More than 7.3 million people are employed in more than 130,000 schools in the United States.<sup>1</sup> School settings place teachers, other employees, and students at risk for influenza infection.<sup>2</sup> As part of a health hazard evaluation, we determined the prevalence of influenza-like illness (ILI) among employees of a suburban Ohio school district.

### METHODS

The school district includes 5 elementary schools, 1 middle school, and 2 high schools and serves nearly 7,800 students. Using a cross-sectional study design, we invited all 841 school district employees to complete a Web-based survey in March 2013. As a public health response, in accordance with guidelines in US Title 45 Code of Federal Regulations, Part 46, this evaluation did not require Institutional Review Board approval.

The anonymous survey included questions regarding demographics, work, medical history, receipt of the 2012-2013 influenza vaccine, and ILI symptoms since the start of the school year. ILI was defined as being sick with fever and either sore throat or cough at any time from August 22, 2012, through survey completion.

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The findings and conclusions presented here are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

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Characteristics of employees who reported ILI symptoms were compared with those of employees who did not report symptoms, and characteristics of employees who reported working while ill were compared with those of employees who did not do so. Bivariate analyses included the Student *t* test,  $\chi^2$  test, and Fisher exact test, as appropriate. All tests were 2-tailed; statistical significance was set at  $P < .05$ . EpiInfo 7.1.1.0 (Centers for Disease Control and Prevention, Atlanta, GA) was used for survey tool creation and statistical analysis.

## RESULTS

Of the 841 employees, 412 (49%) completed the survey. The respondents' median age was 46 years (range, 22-71 years). The majority were female (82%) and self-identified their race as white (99%). Occupational groups included educational (teachers, aides, and paraprofessionals; 75%), operational (bus drivers, maintenance/custodial workers, and food services workers; 7%), and administrative/other support (18%) employees. Workplaces included elementary school (45%), middle school (14%), high school (30%), and other (11%).

Of 394 respondents who answered questions about their medical history, 345 (88%) did not report any medical conditions that put them at greater risk for influenza complications. The others ( $n = 49$ ) reported asthma (5%), diabetes mellitus (3%), heart disease (2%), and a weakened immune system (4%). A total of 238 respondents (58%) reported receiving the 2012-2013 influenza vaccine.

In total, 120 respondents (29%) reported ILI symptoms occurring between August 22, 2012 and survey completion. Most reported ILI symptoms (67%) occurred between December 2012, and February 2013. Four respondents with ILI symptoms reported influenza diagnosed by nasopharyngeal swab.

The prevalence of reported ILI by occupational group was 30% for education employees, 21% for operational employees, and 28% for administrative/other support employees.

The median time taken off work because of ILI was 1 day (range, 0-7 days). Of the 120 respondents who reported ILI symptoms, 92 (77%) reported working while feeling ill, including 71 (77%) educational, 5 (5%) operational, and 16 (17%) administrative/other support employees. Eight respondents reported working <1 day, 60 reported working 1-3 days, and 22 reported working 4 days. The most common main reasons cited for working while ill were feeling a professional obligation to students (28%) and not believing that their illness was contagious (23%) (Table 1).

Of 409 respondents who answered questions about hand hygiene, 361 (88%) reported having a sink with soap or alcohol-based hand sanitizer in the classroom or immediate work area. Respondents reported washing their hands a median of 5 times (range, 0-30 times) during a typical workday.

Employees aged >50 years were more likely to report ILI symptoms compared with those aged ≤50 years (33.1% vs 22.6%;  $P = .03$ ). Employees with asthma were also more likely to

report ILI symptoms compared with those without asthma (52.4% vs 27.4%;  $P = .03$ ). Other demographic characteristics, work characteristics including occupation and workplace, other underlying medical conditions, receipt of the influenza vaccine, and hand hygiene practices were not significantly associated with reporting of ILI symptoms (Table 2).

Employees reporting a weakened immune system caused by active cancer, chronic illness, or medications, such as steroids or other immunosuppressants, were less likely to report working while ill compared with those without a weakened immune system (20.0% vs 78.7%;  $P = .01$ ). Demographic characteristics, work characteristics including occupation and workplace, and other medical conditions were not significantly associated with working while ill (Table 2).

## DISCUSSION

Almost one-third of the respondents reported experiencing ILI during the school year, the majority between December 2012 and February 2013, which is consistent with ILI trends in Ohio.<sup>3</sup> We found that respondents age  $\geq 50$  years and those with asthma, both of which are known risk factors for influenza complications,<sup>4</sup> were more likely to have reported ILI symptoms. Employees with these characteristics should be given extra encouragement to receive the seasonal influenza vaccination.

We found that 77% of respondents with ILI reported working while ill (known as presenteeism). Presenteeism leads to decreased productivity and the potential for infectious disease transmission in the workplace, and has been documented in health care personnel and other occupational groups.<sup>5-7</sup> Our findings are similar to a previous survey in which nearly 83% of US adult respondents reported attending work or school while experiencing ILI symptoms.<sup>8</sup> Another study in a Kansas county found that 57% of school system employees reported working with an ILI.<sup>9</sup>

The two most common reasons cited by respondents for working while ill were having a professional obligation to students and not thinking they were contagious. Targeting messaging to employees that addresses these barriers may benefit school districts. To reduce presenteeism, district policies should ensure adequate staffing and availability of qualified substitute educators and should encourage employees to stay home while ill.

Our evaluation was subject to some limitations. First, respondents self-reported ILI symptoms, which may be subject to recall error. Second, our participation rate was 49%, and thus our results might not be representative of all district employees, especially operational employees, who had lower response rates than educational employees. Third, our evaluation included employees of a single suburban school district, and our results might not be generalizable to employees in other school district settings.

## CONCLUSION

The prevalence of ILI among responding school employees was 29%, and 77% reported working while ill. Encouraging school employees to receive the influenza vaccine and to

stay home when ill should be part of a comprehensive influenza prevention strategy in school districts.<sup>10</sup>

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**Table 1**

Main reasons cited by respondents (n = 90) for working while ill

Main reason cited*	n (%)
I have a professional obligation to my students.	25 (28)
I didn't think I was contagious or could make other people sick.	21 (23)
It's difficult for me to get or prepare for a substitute.	11 (12)
I thought I might be penalized by my employer.	10 (11)
I have a professional obligation to my coworkers.	8 (9)
Other	15 (17)

\* Respondents were asked to choose 1 main reason.

**Table 2**

Factors associated with influenza-like illness symptoms and working while ill

Variable	Employees with ILI symptoms (n = 394-412)	P	Employees working while ill (n = 113-120)	P
Sex				
Female	104 (31)	NS	83 (80)	NS
Male	16 (21)		9 (56)	
Age ≥ 50 years				
Yes	81 (33)	.03	62 (77)	NS
No	25 (23)		26 (74)	
Household includes children age <18 y				
Yes	57 (26)	NS	42 (74)	NS
No	62 (29)		49 (70)	
Occupation				
Educational employee	93 (30)	NS	71 (76)	NS
Operational, administrative, or other support employee	27 (26)		21 (78)	
Workplace				
School	108 (29)	NS	82 (76)	NS
Other	12 (29)		10 (83)	
Employment status				
Part-time	9 (27)	NS	7 (78)	NS
Full-time	111 (29)		85 (77)	
Asthma				
Yes	11 (52)	.03	9 (82)	NS
No	102 (27)		77 (76)	
Diabetes mellitus				
Yes	6 (55)	NS	3 (50)	NS
No	107 (28)		83 (78)	
Weakened immune system				
Yes	5 (36)	NS	1 (20)	.01
No	108 (28)		85 (79)	
Sink with soap or alcohol-based hand sanitizer available in immediate work area				
Yes	107 (30)	NS	Not analyzed	
No	11 (23)			

NS, not significant.